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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/000,340	12/04/2001	Masanobu Nishimine	0171-0801P-SP	9766

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EXAMINER	
NGUYEN, NGOC YEN M	
ART UNIT	**PAPER NUMBER**
1754	

DATE MAILED: 07/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/000,340	NISHIMINE ET AL.	
	Examiner	Art Unit	
	Ngoc-Yen M. Nguyen	1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 January 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rohr '560, optionally further in view of Nishimine et al (5,855,860).

Rohr '560 discloses a method for making fumed silica having a surface area in the range of 75-500 m^2/g, which comprises feeding into a combustion chamber, quench air and a gaseous combustible mixture, where the gaseous combustible mixture comprises a mixture of a silicon compound selected from the group consisting of a silane, organosilane, and a mixtures thereof, and a mixtures of elements selected from the group consisting of:

a) oxygen and hydrogen, and

b) oxygen, hydrogen and nitrogen, and there is present in the gaseous combustible mixture from about 0.05 to about 2.5 mole% of the silicon compound based on the total moles in the gaseous combustible mixture and sufficient oxygen in the gaseous combustible mixture to produce a flame in the combustion chamber having calculated adiabatic flame temperature in the range of about 1400-2000°C combusting said gaseous combustible mixture at an adiabatic temperature of about 1400-2000°C to produce said fumed silica, and recovered said fumed silica (note claim 1).

The silicon compound used in the gaseous combustible mixture can be methyltrichlorosilane (note claim 2). Rohr '560 discloses that the gaseous combustion mixture consists essentially of a mixture of $(CH_3)_3SiCl_3$ and $SiHCl_3$ within about a 1.3 to about 1.5 mole % range, about 55 to about 70 mole% nitrogen, about 15 to about 20 mole % oxygen and about 10 to about 25 mole % hydrogen (note claim 5). The ratio of hydrogen to organosilane in Rohr '560 ranges from (10 / 1.5 =) 6.67 to (25 / 1.3 =) 19.23. This range overlaps the claimed range of "½ to 9". The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, see In re Malagari, 182 U.S.P.Q. 549.

Since the ratio of hydrogen to the methyltrichlorosilane in Rohr '560 overlaps the claimed range, the amount of water vapor resulting from the combustion of hydrogen in Rohr '560 would also overlap the claimed range because the amount of water formed is directly proportion to the amount of hydrogen used.

Rohr '560 further discloses an annular guard flame was maintained by feeding hydrogen in a concentric ring around the inner burner tube. Quench air was introduced approximately 20 cm upstream of the burner tip (note column 3, lines 38-42). More particularly, as shown in the Figure, a burner 10 has a conduit 11 for introducing a mixture of a silicon compound, a fuel and air; a duct 12 for the fuel and a duct 13 for quench air (note column 2, lines 47-51). The use of additional concentric ring(s) or

tube(s) would have been obvious to one of ordinary skill in the art to maintain the desired condition of the flame for the process of producing fumed silica.

Optionally, Nishimine '860 can be applied to teach that in a process of producing silica by flame hydrolysis of an organosilane, well-known burners may be used for burning the reactants, for examples, simple triple or quadruple tube burners may be used. The preferable burner is a quadruple tube burner (note column 3, lines 45-60).

The difference is Rohr '560 does not specifically disclose the linear velocity of the gas mixture in the center tube.

However, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to optimize such velocity in the process of Rohr '560 through routine experimentation to obtain the desired fumed silica product. It should be noted that Rohr '560, fumed silica with high surface area and low standard deviation is desired just as in the claimed invention.

Applicant's arguments filed January 9, 2004 have been fully considered but they are not persuasive.

Applicants argue that Rohr '560 does not have any specific actual examples of the fumed silica with high surface area.

The disclosure of Rohr '560 should not be limited to just the examples. Since Rohr '560 specifically discloses the surface area range of 75-500 m^2/g (note claim 1), it would have been obvious to one of ordinary skill in the art to optimize the process conditions for the process of Rohr '560 to obtain the high surface area. Applicants have

not provided any evidence that the high surface area silica cannot be produced by the process of Rohr '560.

Applicants argue that Sample (B) is a comparative example, outside of the scope of Rohr '560.

The range for the ratio of hydrogen to the organosilane for the process of Rohr has been recalculated based on the values recited in claim 5 of Rohr '560, note the above rejection.

Applicants argue that the ratio of hydrogen to the organosilane for Sample A is 30.1 mol/mol, which is outside of the claimed range.

Again, such ratio is calculated out to be 6.67-19.23 based on the values recited in claim 5 of Rohr '560. This range overlaps the claimed range of ½ to 9, thus the amount of water vapor formed in Rohr '560 would inherently overlaps the required range for the amount of water vapor in Applicants' claims.

Applicants argue that Nishimine '860 only discloses the use of a triple or quadruple tube burner.

Nishimine '860 is only relied upon to teach that the quadruple tube burner can be used instead of the triple tube burner of Rohr '560.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoc-Yen M. Nguyen whose telephone number is (571) 272-1356. The examiner is currently on Part time schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Stan Silverman be reached on (571) 272-1358. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed (571) 272-1700.

Ngoc-Yen M. Nguyen
Primary Examiner
Art Unit 1754

nmn
June 28, 2004